

Amendments to the Drawings:

The drawing sheet or sheets attached in connection with the above-identified application containing Figure(s) 1-2 are being presented as a new formal drawing sheet or sheets to be substituted for the previously submitted drawing sheet or sheets. The drawing Figures 1-2 have been amended. Appended to this amendment is an annotated copy of the previous drawing sheet which has been marked to show changes presented in the replacement sheet of the drawing.

The specific changes which have been made to Figure 1-2 are marked as prior art.

REMARKS

Applicant thanks the Examiner for a thorough search of the present application, but respectfully requests reconsideration of the present application in view of the reasons that follow. Claims 1-20 are now pending in this application.

I. Drawing Objections under 37 CFR 1.83

In section 1 of the Office Action, the Examiner objected to Figures 1 and 2 and asserted that “Figures 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated.” In response to this objection, Applicant has included herewith substitute Figures 1 and 2 in accordance with the Examiner’s recommendation.

II. Rejection of claims 1-2, 4-7, 10-12, 14-16, and 18 under 35 U.S.C. § 102(a)(b)(e)

In section 2 of the outstanding Office Action, the Examiner rejected claims 1-2, 4-7, 10-12, 14-16, and 18 under 35 U.S.C. § 102(a), (b), and (e) as being anticipated by US Patent No. 6,672,711 to Kao et al. (Kao) which was previously published as U.S. Patent Publication No. 2002/0018086. Applicant respectfully traverses the rejection for the reasons set forth below.

The Examiner asserted that Elmendorf teaches all of the required limitations of at least independent claims 1 and 11. Applicant respectfully disagrees with the Examiner’s position. In particular, Applicant submits that the Examiner failed to make a prima facie case of anticipation. For a prior art reference to anticipate the claim of a patent, the reference must disclose each and every limitation of a claimed invention. *See Apple Computer, Inc. v. Articulate Systems, Inc.*, 234 F.3d 14, 20 (Fed. Cir. 2000). In this instance, Kao fails to teach, suggest, or inherently disclose “initially commencing printing using a subset of the elements in the group and, during the course of printing, increasing the number of elements available to print in the group,” as recited in independent claim 1. (Emphasis added). In the same manner, Kao also fails to teach, suggest, or inherently disclose “the printer being further arranged to subsequently increase the number of printing elements in that group which are used to print,” as recited in claim 11. (Emphasis added).

Kao teaches an ink jet print head that has heating elements corresponding to each ink jet cell. (*see, e.g.*, Abstract and Col. 2, lines 58-67). In particular, a driving circuit is provided that “selectively drives the heating elements to provide energy to the corresponding ink jet cells and to heat the ink jet cells according to printing data from the printing device.” (Col. 2, lines 62-65). Each ink jet cell has a threshold associated with it and “[w]hen supplied energy is greater than a threshold, inkdrops are jetted from the nozzles onto the medium.” (Col. 2, line 67-Col. 3, line 1). More specifically, Kao teaches the use of a “first driving signal” and a “second driving signal.” “The first driving signal drives a corresponding first set of heating elements of the first set of nozzles with an energy *greater* than the threshold to heat a corresponding first set of printing cells, *so that ink is jetted from the first set of nozzles.*” (Col. 3, lines 4-10; emphasis added). “The second driving signal drives a corresponding second set of heating elements with an energy *less* than the threshold, so that a corresponding second set of *ink jets cells are heated without jetting ink drops.*” (Col. 3, lines 11-15; emphasis added). Thus, Kao relates to a method of keeping ink jet cells heated wherein “thermal accumulation conditions of different inkjet cells are similar, and the ink jet cells are thus capable of jetting ink drops of uniform sizes to achieve better printing quality.” (Col. 3, lines 15-18).

In contrast, independent claim 1 recites “initially commencing printing using a subset of the elements in the group and, during the course of printing, increasing the number of elements available to print in the group.” (Emphasis added). Similarly, independent claim 11 recites “the printer being further arranged to subsequently increase the number of printing elements in that group which are used to print.” (Emphasis added). Applicant submits that Kao does not expressly or inherently teach such a feature. In rejecting the each claim, the Examiner asserted on page 4 of the Office Action that “when the nozzle or inkjet elements initially provided with the second signal receives the first signal, the number of elements available to print are increased.” Accordingly, the Examiner is essentially asserting that some of the ink jet elements that were originally receiving the second signal (produces no jetting of ink drops) may at some point receive the first signal (produces jetting of ink drops), and therefore the number of elements available to print would increase. Applicant respectfully disagrees with the Examiner and submits that the Examiner is reading subject matter into the

cited reference which is neither taught nor suggested by the cited reference. Applicant respectfully reminds the Examiner that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegall Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Additionally, “when the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the reference. The mere fact that a certain thing may result from a given set or circumstances is not sufficient [to establish inherency]. That which may be inherent is not necessarily known. *In re Rijchaert* 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (quoting case law precedent).

Accordingly, the fact that the number of ink jet elements *may* increase does not necessarily mean that such an increase will inherently happen. The number of inkjet elements may increase, decrease, or stay the same. Accordingly, this feature of claims 1 and 11 is neither inherent nor taught or disclosed by Kao. As such, Applicant respectfully requests the withdrawal of the rejection of independent claims 1 and 11.

With regard to claims 4 and 14, the Examiner asserted that Kao teaches “the number of elements in the group available to print is increased as a function of the number of firing pulses sent to elements of the group,” as recited in claim 4. In other words, the Examiner asserts that Kao teaches that as the number of “firing pulses” increases, so does the number of elements in the group available to print. Specifically, the Examiner states on page 4 of the Office Action that “[a]s it can be observed, the number of nozzles or inkjets available for ejecting ink is a function of signal 1. The more nozzles that receive signal 1, the more nozzles are available for printing.” Applicant respectfully disagrees. While Kao does teach that the number of ink jets that receive signal 1 is proportional to the number of ink jets that dispense ink, Kao fails to teach or even suggest that “the group available to print is increased as a function of the number of firing pulse,” as recited in claim 4. (Emphasis added). In Kao, *all* of the ink jets are “available” to print. However, only a certain number of ink jets are used based on the received input signal. Accordingly, Kao does not teach increasing the number of “available” ink jets, since *all* the ink jets in Kao are already available for printing. Furthermore, Kao fails to discuss anything related to analyzing the total “number of firing

pulses” in order to increase the number of available ink jets. As such, Applicant respectfully submits that Kao fails to teach each and every element of claims 4 and 14 as required for an anticipation rejection.

With regard to claims 5 and 15, the Examiner asserted that Kao teaches that “each element newly made available to the group is initially made available for use less frequently than the existing elements,” as recited in claim 5. In particular, the Examiner asserted on page 4 of the Office Action that “[i]nherently for those nozzles that receive signal 1 for the first time relative to those nozzles that already received signal 1 at least once, the nozzles that had just received signal 1 for the first time are less frequently use [sic] than the nozzles that already received signal 1 at least once.” In support of this assertion, the examiner cited Col. 5, lines 1-28. Applicant has carefully examined the cited portion of text and cannot find any support whatsoever for such an assertion. The cited portion of text merely discusses that the first driving signal has a higher voltage than the second driving signal in order to breach the predetermined threshold to enable ink to be jetted. Thus, the rejection is not supported by the text of Kao. With regard to the inherency argument, Applicant submits that it is *not* inherent that a ink jet that receives ink for the first time will be used less frequently than an ink jet that has already received signal 1. In contrast, Applicant submits that an ink jet that receives signal 1 for the first time will be used with the same frequency of an ink jet that has already received signal 1. This is because Kao teaches keeping all the ink jets heated. (*see, e.g.,* Abstract, Col. 2, lines 54-67, and Col. 3 lines 1-17). Since all the ink jets are heated, no warm up time is required. Thus, the moment that an ink jet receives signal 1, the inkjet will begin jetting in the same frequency as an inkjet that has already received signal 1. As such, Applicant respectfully submits that Kao fails to teach each and every element of claims 5 and 15 as required for an anticipation rejection.

III. Rejection of Claims 3, 8, 9, 13, 17, 19, 20 under 35 U.S.C. § 103(a)

On page 8 of the Office Action, the Examiner rejected claims 3, 9, 13, 17, 19, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Kao in view of U.S. Patent No. 6,260,940 to Yamada et al. (Yamada). In addition, on page 11 of the Office Action, the Examiner rejected claims 8 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Kao

in view of U.S. Patent No. 5,864,351 to Silverbrook (Silverbrook). In addition, on page 12 of the Office Action, the Examiner rejected claim 20 under 35 U.S.C. § 103(a) as being unpatentable over Kao in view of Silverbrook further in view of Yamada. Applicant respectfully traverses these rejection for the reasons set forth below.

Applicant notes that these remaining prior art references were directed to specific limitations recited in the remaining dependent claims of the present application. However, each of these dependent claims include at least one of the deficiencies discussed above with regard to the independent claims and Applicant submits that none of these remaining prior art references cure the deficiencies discussed above.

Because the reference cited by the Examiner fails to teach all of the required limitations of independent claims 1 and 11, Applicant submits that each of these independent claims are patentable over this prior art. Furthermore, because dependent claims 2-10 and 12-20 are each directly or indirectly dependent upon independent claims 1 and 11, Applicant submits that each of these claims are allowable for at least the same reasons as discussed above, in addition to the reasons discussed with regard to dependent claims 4, 5, 14, and 15.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.


The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 08-2025. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 08-2025. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 08-2025.

Respectfully submitted,

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HEWLETT-PACKARD CO.
Customer Number: 22879

By  61,092

William T. Ellis
Attorney for Applicant
Registration No. 26,874
Telephone: (202) 672.5485